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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JEFFERY N. GLEASON

Appeal 2009-001535
Application 10/690,319
Technology Center 2800

Decided: August 10, 2009

Before JOSEPH F. RUGGIERO, JOHN A. JEFFERY, and KEVIN F.
TURNER, *Administrative Patent Judges*.

TURNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the Final Rejection of claims 1-8. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

Appellant's claimed invention relates to processes related to the formation of a metal feature on an intermediate structure of a semiconductor device (Spec. ¶ [0002]). The instant claims are directed to that intermediate structure, having at least one exposed open fuse structure and a metal feature on an exposed metal structure.

Independent claim 1, the only independent claim, is illustrative of the invention and reads as follows:

1. An intermediate structure of a semiconductor device comprising:

at least one exposed open fuse structure on the intermediate structure of the semiconductor device; and

a metal feature on an exposed metal structure of the intermediate structure of the semiconductor device, wherein a metal of the metal feature is present on the exposed metal structure and is not present on the at least one exposed open fuse structure.

The Examiner relies on the following prior art reference to show unpatentability:

Boleky	US 3,699,395	Oct. 17, 1972
Sekiguchi	US 6,008,124	Dec. 28, 1999

Claims 1 and 3-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Boleky¹.

Claim 2 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Boleky, or in the alternative under 35 U.S.C. § 103(a) as being unpatentable over Boleky.

ISSUES

Appellant contends that the Examiner's rejections are in error. Appellant argues the strips (18, 18') cited in Boleky as disclosing "an

¹ We note in passing that claim 8 requires that the intermediate structure is "an SRAM or FLASH memory chip," that Boleky is specifically directed to "read-only memories," but Appellant has not raised the same as an issue.

exposed metal structure” are actually silicon (App. Br. 5), and that such semiconductor material in Boleky cannot anticipate the cited element of claim 1 (*Id.*). The Examiner responds that a specific section of Boleky teaches that the exposed layer 18 is a metal, so that Boleky’s layer 18 meets the limitation of a “metal exposed structure,” as recited in claim 1 (Ans. 5-6). Appellant argues that this section of Boleky, cited for the first time in the Answer, is an improper new ground (Reply Br. 2-3), and that the cited section of Boleky is most likely a typographical error (Reply Br. 4).

Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but chose not to make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Thus, the issues arising from the respective positions of Appellant and the Examiner are:

(i) Has Appellant shown reversible error in that Boleky fails to teach “an exposed metal surface” as recited in claim 1?

(ii) Has Appellant shown reversible error in that Boleky fails to teach or suggest all of the elements of claim 2 to render that claim anticipated or obvious?

FINDINGS OF FACT

1. The instant Specification details an intermediate structure of the semiconductor device may include first and second exposed metal structures, where the first is a surface upon which formation of the metal feature occurs and the second is a smaller structure upon which formation of the metal feature is not desired. In one embodiment the first exposed metal

structure is a metal bond pad, or interconnect pad, and the second exposed metal structure is an opened fuse. (Spec. ¶ [0022]).

2. Boleky discloses a read-only memory device where semiconductor strips (18) are formed on the surface (14) of a substrate (12) through patterning, where diodes (16) are formed from portions of those semiconductor strips. A layer of insulating material (28) is provided so that the metal strips (32) can cross the semiconductor strips, and connect with the bonding pads (26). The metal connections also includes fuses (42) where particular fuses may be blown to disconnect particular diodes from the matrix (Col. 2, l. 10 - col. 3, l. 58; Figs. 1 & 2, elements 12, 14, 16, 18, 18', 26, 32, 42, 52)

3. Boleky recites that “[o]wing to the high doping of the semiconductor elements 42, the contacts of the elements 42 with the metal strips 18 and the metal portions 52 of the diodes 16 are non-rectifying” (Col. 5, ll. 44-47). All other recitations of “18” in Boleky refer to that element as being made from a semiconductor material, namely silicon.

4. Sekiguchi discloses processes for forming a semiconductor device having a silicide film, where the reference provides: “even when carrying out a NH₃ plasma treatment, the effect of the present invention can be expected as long as formation conditions capable of forming a barrier compound layer of a compound of nitrogen, oxygen, metal such as titanium and silicon, are used.” (Col. 16, l. 64 – col. 17, l. 2).

PRINCIPLES OF LAW

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior

art reference.” *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988).

[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

During examination, the claims must be interpreted as broadly as their terms reasonably allow. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004). When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. *In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989). “Even when guidance is not provided in explicit definitional format, the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir. 2005) (en banc) (citations and internal quotation marks omitted).

ANALYSIS

Appellant argues the strips (18, 18’) cited in Boleky as disclosing “an exposed metal structure” (Ans. 3) are strips of semiconductor material,

specifically N-type silicon (App. Br. 5). As such, Appellant argues that although the Examiner has indicated that silicon is a metal, the semiconductor material in Boleky cannot anticipate the cited element of claim 1 (*Id.*). The Examiner responds that a specific section of Boleky teaches that the exposed layer 18 is a metal (FF 3), so that Boleky's layer 18 meets the limitation of a "metal exposed structure," as recited in claim 1 (Ans. 5-6).

Appellant argues that this section of Boleky, cited for the first time in the Answer, is an improper new ground (Reply Br. 2-3). We do not agree that this is a new ground of rejection, although the Examiner's interpretation of the reference has apparently changed. However, we agree with Appellant that the cited section of Boleky is most likely a typographical error (Reply Br. 4). Everywhere else in Boleky the "strips 18" are referred to as formed from semiconductor material and the metal strips are referenced as "32" (Reply Br. 7-9). We agree with Appellant that the use in Boleky of "metal strips 18" is inconsistent with the other portions of Boleky (Reply Br. 5-6), and we do not take the cited portion of Boleky as anticipatory of the limitation of a "metal exposed structure," recited in claim 1. As such, we find that the Examiner erred in rejecting claims 1 and 3-8 as being anticipated by Boleky.

The Examiner also argues that Appellant fails to recite any specific metal material for the metal exposed structure in the claim, interprets "metal" to be a conductor, and argues that silicon has similar properties to metal and is more electropositive than lead (Ans. 6). Appellant responds that the Examiner has ignored other properties of metals, that the Examiner has acknowledged that silicon is like metal and thus cannot be metal, and

that silicon generally known to be a semiconductor (Reply Br. 10-11). We agree with Appellant in that the recitation of “metal” in claim 1 should be construed to mean “metal.” Construing that claim element to mean “conductor” does not fall within the confines of the broadest reasonable interpretation of claim 1. The fact that Appellant has not recited any specific metal material is immaterial because the meaning of the term “metal,” at least within the context of the instant claims, is indisputable.

The Examiner also relies upon a section of Sekiguchi (FF 4) to buttress the Examiner’s claim that “an artisan in the art considers the layer 18 of Boleky to be a metal material” (Final Office Action 4). As Appellant has pointed out (App. Br. 6-7), the bulk of Sekiguchi refers to the barrier compound layer as having four elements, where it is suggested that the referenced section of Sekiguchi intended to refer to of nitrogen, oxygen, a metal such as titanium, and silicon. We agree and find that Sekiguchi does not support the Examiner’s hypothesis that silicon is a metal.

With respect to the rejection of claim 2, even if the subject matter of that claim were anticipated or rendered obvious over Boleky, Boleky still fails to teach or suggest all of the elements of claim 1, from which claim 2 depends. As such, we find the Examiner’s rejection of claim 2 to be in error as well.

CONCLUSION

The decision of the Examiner rejecting claims 1 and 3-8 under 35 U.S.C. § 102(b) based on Boleky, and rejecting claim 2 in the alternative under 35 U.S.C. §§ 102(b), 103(a) as being anticipated by or unpatentable over Boleky, is reversed.

Appeal 2009-001535
Application 10/690,319

DECISION

The Examiner's rejection of claims 1-8 before us on appeal is
REVERSED.

REVERSED

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